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| 10/561,248 | 05/01/2006 | Hideki Sato | 31238-226493 | 5986 |
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| VENABLE LLP P.O. BOX 34385 WASHINGTON, DC 20043-9998 | | | EXAMINER CHEN, KEATH T | |
| | | | ART UNIT 1709 | PAPER NUMBER |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/561,248

Applicant(s)

SATO ET AL.

Examiner

Keath T. Chen

Art Unit

1709

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 12/19/2005.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

US 5009922, the primary reference of this rejection, is a patent family of JP2011160, admitted prior art by applicant.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 4, and 7/4 are rejected under 35 U.S.C. 102(b) as being anticipated by Harano et al. (US 5009922, hereafter '922).

'922 teaches all limitation of claim 1:

A production stabilizing device (Fig. 3, #1) for forming a multicomponent film by melting and evaporating a vaporizing raw material (#3) containing at least two sorts of metals, alloys or intermetallics compound (col. 10, lines 24-26) in a single crucible or hearth (#4) with use of plasma (#14) converged by an electric field or a magnetic field (#5), the device having an electric power supply unit (#7) for melting and evaporating the raw material and a plasma control unit (#15) for controlling the electric field or the magnetic field, characterized by a means for melting and evaporating a part of the raw material and then sequentially melting and evaporating an unmelted portion of the raw material (Fig. 5, col. 5, lines 19-22).

Claim 4 is rejected for substantially the same reason as claim 1 rejection above. Specifically, the movement of the magnetic field (#5) as described in col. 5, lines 19-22

Art Unit: 1709

meets the limitation of the process sequence of "(first) melting and evaporating a part of the raw material and then sequentially melting and (then) evaporating an unmelted portion of the raw material".

'992 further teaches the limitation of claim 7/4:

Using a sintered compact (col. 10, lines 24-26) or a green compact for the raw material.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
2. Claims 2, 5 and 7/5 are rejected under 35 U.S.C. 103(a) as being unpatentable over '922, further in view of Ichikawa et al. (JP3193868, hereafter '868).

'922 teaches all limitations of claim 1, as discussed above.

'922 does not teach the limitation of claim 2:

Art Unit: 1709

Said means comprises a sequentially increased electric power supply unit which supplies first electric power necessary to evaporate the raw material and then supplies electric power gradually increased from the first electric power at predetermined intervals repeatedly up to necessary maximum electric power to sequentially melt the unmelted portion.

'868 is an analogous art in the field of forming a transparent conductive (English abstract, line 2; '922, ITO formation, col. 10, lines 48-50), particularly in solving the problem of uniformity (English abstract, last two lines; '922, col. 14, lines 9-13). '868 teaches a method of increasing power supply (Fig. 2) to improve the uniformity of the thin film. Notice the region between 2 and 3 in the x-axis (the ramp portion) can be represented as many small steps of incremental increase of power.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have combined '868 with '922. Specifically, to have adopted the power increase steps as taught in Fig. 2 of '868 and applied to the apparatus as taught in Fig. 3 of '922, for the purpose of improving film uniformity.

'922 teaches all limitations of claim 4, as discussed above.

Claim 5 is rejected for substantially the same reason as claim 2 rejection above. Specifically, '868's teaching is the same procedure steps as specified in claim 5.

Claim 7/5 is rejected for substantially the same reason as claim 7/4 rejection above.

3. Claims 3, 6 and 7/6 are rejected under 35 U.S.C. 103(a) as being unpatentable over '922, further in view of Shintani et al. (JP4350157, hereafter '157).

Art Unit: 1709

'922 teaches all limitations of claim 1, as discussed above. '922 further teaches that the shape and density of the plasma falling on the hearth can be changed by adjusting magnet #15 and/or #5 of Fig. 3 (col. 9, lines 1-11).

'922 does not explicitly teach the limitation of claim 3:

Said means comprises a plasma control unit which performs plasma control of converging the plasma in a first plasma region necessary to evaporate the raw material and plasma control of continuously and sequentially moving and expanding the plasma from the first plasma region up to maximum plasma region to sequentially melt the unmelted portion.

'157 is an analogous art in the field of PVD for producing a thin film (English abstract), particularly in solving the problem of uniformity. '157 teaches a way to control the size of plasma focus area (Fig. 2) by moving in the radial direction to improve film forming efficiency ([0015]) and which direction to move depends on application.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have combined '157 with '922. Specifically, to have adopted the magnets focus control device taught in Fig. 2 of '157 to replace the single magnet (#5) of Fig. 3 of '922, for the purpose of improving film forming efficiency, with reasonable expectation of success. With only two directions to test (gradually move the magnets 6a-d in or out), and the common knowledge that the components of a bimetal alloy vaporize at different rates, it would be obvious for a person of ordinary skills in the art to figure out expanding the plasma region would have produced more uniform film.

Claim 6 is rejected for substantially the same reason as claim 3 rejection above.

Claim 7/6 is rejected for substantially the same reason as claim 7/4 rejection above.

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over '922, further in view of Shima et al. (JP 2001001202, hereafter '202).

'922 teaches all limitations of claim 1, as discussed above.

'922 does not teach the limitation of claim 8:

A coated tool comprising a cutting tool base material of a high-speed tool steel, a die steel, a cemented carbide, a cermet or the like and a coating film of a nitride, a carbide, a boride, an oxide or a silicide containing a plurality of metallic elements and formed on the base material by the method of claim 4.

'202 is an analogous art in the field of PVD (ion plating, English translation, [0004], line 9). '202 requires a thin film formation apparatus and method for the thin film (including nitride, abstract) formation on tools ([0001], last line, high degree-of-hardness steel) to improve the cutting life and oxidation resistance of the tool.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have combined '202 with '922. Specifically, to have applied the method taught by '922 to cutting tools as taught by '202, for the purpose of improving cutting life and oxidation resistance, with reasonable expectation of success, to have obtained the invention of claim 8.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent

Art Unit: 1709

and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1-6 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-2 of U.S. Patent No. 10/561246.

Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-6 are rearranged elements of claims 1-2 of '246. .

6. Claim 7 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 2 of copending Application No. 10/561246 in view of '922. As discussed in claim 7 102(b) rejection above.

This is a provisional obviousness-type double patenting rejection.

7. Claim 8 is provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claim 3 of copending Application No. 10/561246. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

Art Unit: 1709

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keath T. Chen whose telephone number is 571-270-1870. The examiner can normally be reached on M-F, 8:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

kc

K.C.


MICHAEL B. CLEVELAND
SUPERVISORY PATENT EXAMINER